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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---|---|---|---|---|
| 10/734,407 | 12/12/2003 | Thomas L. Kuntz | 7762 US | 1173 |

30078 7590 10/17/2007

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| EXAMINER | |
|---|---|
| AGHDAM, FRESHTEH N | |
| **ART UNIT** | **PAPER NUMBER** |
| 2611 | |

| MAIL DATE | DELIVERY MODE |
|---|---|
| 10/17/2007 | PAPER |

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 10/734,407 | KUNTZ, THOMAS L. | |
| | Examiner | Art Unit | |
| | Freshteh N. Aghdam | 2611 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *26 July 2007*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *1-6* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,2,5 and 6* is/are rejected.

7)☒ Claim(s) *3-4* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

## DETAILED ACTION

### *Response to Arguments*

Applicant's arguments with respect to claims 1-6 have been considered but are moot in view of the new ground(s) of rejection.

### *Claim Rejections - 35 USC § 103*

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-2 are rejected under 35 U.S.C. 103(a) as being unpatentable over Liu et al (US 2004/0014480), and further in view of Kumura (US 2007/0036248).

As to claim 1, Liu discloses a method of detecting a frequency correction burst signal in a received signal comprising the steps of: delaying the received signal by a period to produce a reference signal (Fig. 1, 101); and correlating the received signal with a conjugate version of the reference signal (102) to produce a correlation result (output of 103), wherein the correlation result is indicative of a location of the frequency correction burst signal within the received signal (Abstract; Par. 35). Liu is not explicit about the amount of delay to be an integer multiple of the symbol period of the frequency correction burst signal to produce the reference signal. Kumura discloses a frequency offset estimation method used in a receiver that correlates the received signal with a delayed and a conjugate version of the received signal, wherein the delay is a

multiple integer of the symbol period (Fig. 1, 15; Par. 16); and as a result, the correlation result is insensitive to a frequency offset in a nominal carrier frequency. Therefore, it would have been obvious to one of ordinary skill in the art to incorporate the teaching of Kumura into the system of Liu in order to improve the accuracy of estimation to some extent if the number of delayed symbols increases (Par. 6).

As to claim 2, Liu further discloses estimating the frequency offset as a function of the correlation result (Fig. 1, 108; Par. 41).

Claims 3-4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Liu et al and Kumura, further in view of Junell (US 5,953,649).

As to claims 5-6, Liu and Kumura disclose all the subject matter claimed in claim 1, except for the step of down converting the received signal to a baseband complex discrete time sample signal by mixing the received signal with a first local oscillator signal to produce an intermediate frequency signal; mixing the sampled intermediate frequency signal with a second complex oscillator signal to produce a sample signal with real and quadrature components. One of ordinary skill in the art would recognize that it is well known in the art to down convert the received signal to a baseband complex sample signal in the front-end portion of the receiver prior to performing any other functions on the received signal such as sync detection by down converting the received signal to the intermediate frequency signal using a mixer and an oscillator and down converting the intermediate frequency signal to the baseband signal using another mixer and oscillator as it is evidenced by Junell (Fig. 5, means 51-52; Col. 11, Lines 22-

48). Therefore, it would have been obvious to one of ordinary skill in the art to combine the teaching of Junell with Liu and Kumura for proper processing the received signal by down converting the received signal to the baseband signal prior to detecting the frequency correction burst signal.

### *Allowable Subject Matter*

Claims 3-4 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

### *Conclusion*

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Freshteh N. Aghdam whose telephone number is 571-272-6037. The examiner can normally be reached on 9:00-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chieh Fan can be reached on 571-272-3042. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Freshteh Aghdam
Examiner
Art Unit 2611

October 4, 2007

CHIEH M. FAN
SUPERVISORY PATENT EXAMINER